A.D. 1816 . . . . . N° 4001.

SPECIFICATION

OF

JOHN ISAAC HAWKINS.

FIRE GRATES AND APPARATUS FOR SUPPLYING THE SAME WITH FUEL.

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Fire Grates and Apparatus for Supplying the same with Fuel.

DOWSON AND HAWKINS' SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOHN ISAAC HAWKINS, of Great Titchfield Street, in the County of Middlesex, Engineer, send greeting.

WHEREAS His most Excellent Majesty King George the Third, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-third day of March, in the fifty-sixth year of His reign, did give and grant unto Emerson Dowson, of Welbeck Street, in the County of Middlesex, Ironmonger, and the aforesaid John Isaac Hawkins, their executors, administrators, and assigns, His special licence, full power, sole privilege and authority, that the said Emerson Dowson and John Isaac Hawkins, their executors, administrators, and assigns, during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within that part of the United Kingdom of Great Britain and Ireland, called England, the Dominion of Wales, and Town of Berwick upon Tweed, their said Invention of "AN IMPROVEMENT OR ADDITION TO GRATES AND STOVES, AND AN INSTRUMENT, MACHINE, OR APPARATUS FOR SUPPLYING GRATES AND STOVES WITH FUEL;" in which Letters Patent there is contained a proviso, obliging the said Emerson Dowson and John Isaac Hawkins, under their hands and seals, or under the hand and seal of one of them, to cause a particular description of

the nature of their said Invention, in what manner the same is to be performed, to be enrolled in His Majesty's High Court of Chancery within two calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same (relation being thereunto had) may more fully and at large appear.

NOW KNOW YE, that in compliance with the said proviso, I, the said John Isaac Hawkins, do hereby declare that the nature of our said Invention, and the manner in which the same is to be performed, is fully described and ascertained as follows, that is to say:—

The general intention of our said improvement on grates and stoves, and our said instrument, machine, or apparatus for supplying grates and stoves with fuel, is to produce a more perfect combustion of the fuel than is effected in the grates and stoves of the usual construction; and we do accomplish this our intention by the inserting or depositing of fresh coals or unburnt fuel into or under the bottom of a fire previously lighted and burning. And we do prepare our grate or stove for the reception of the said fresh coals or unburnt fuel, by making the bottom bars or gratings which support the burning fuel quite flat and level; and we do place under the said bars or gratings a plate for the purpose of occasionally obstructing the passage of fine coals or cinders between the said bars or gratings; and this plate we do cause to slide away, or otherwise to be hung with hinges, and fall away whenever it may be thought necessary for the admission of fresh air up through between the said bars to the bottom of the burning fuel; and we do sometimes place upon this plate ribs, projecting upwards, so as to fill the interstices or spaces between the said bars or gratings, and present a plane surface to the bottom of the fire. This sliding or falling plate may always be removed after fresh coals have been deposited under the fire, as soon as the heat shall have caused the coals to have a small degree of adhesion. And in stove grates or kitchen ranges we do sometimes make the lowest front bar, or that front bar which is immediately above the horizontal grating that supports the fuel, to slide up, or to turn upon hinges, in order, at pleasure, to give more room than is usual between the said gratings and the said lowest front bar for the reception of our instrument, machine, or apparatus, as hereinafter described; and we do insert or deposit fresh coals or unburnt fuel under the fire, upon the said flat grating and plate, by means of our said instrument, machine, or apparatus, which may with propriety be called a feeding shovel. The construction of this feeding shovel will be easily comprehended by supposing a common fire shovel to have a side perpendicular to and standing up at right angles from the pan or bottom of

the shovel, and crossing also at right angles the place where the handle is joined to the pan; let the height of this side be two inches from the bottom of the pan, and let the width of the pan and the length of the side be eight inches from the extreme ends of this first or handle side, and standing at right angles to the said side and to the pan; let two parallel sides extend to that end of the pan which is opposite to the handle; and, supposing the pan to be nine inches long, these parallel sides will also be nine inches long at the bottom edge where they join the pan, but they are only to be seven inches long at the top edge, and consequently the ends or extreme edges of these sides next the end of the pan will taper off in an angle of forty-five degrees from the plane of the pan; let a top piece be seven inches long and eight inches wide, reckoning that direction to be the length which is parallel to the handle of the shovel; let this top piece be united to the three sides above described, which will, together with the bottom or pan, form a box, open only at the side or end which is opposite to the handle, the plane of the opening making an angle of forty-five degrees with the planes of the top and bottom; let this open end of the box be closed by a door or flap fastened by hinges to the end of the top piece; let the handle be hollow, and let a rod slide through the hollow handle and through the end of the box next to the handle, and let a septum or piston, nearly filling the width and height of the box be fixed at right angles across the end of the said rod, so that the motion of the rod forward and backward within the handle shall move the piston or septum forward and backward within the box, and on being pressed against the aforesaid door or flap the said piston shall force open the door or flap. The other end of the piston rod may be terminated by a knob or ball, which knob or ball may form a stop to prevent the piston from being protuded farther through the doorway than is necessary for opening the door. The whole motion of the piston may be about eight inches, or from the handle end of the box to about the middle of the door, which is one inch beyond the hinges of the door, or one inch short of the extreme end of the bottom or pan. From this description it will be seen by any competent workman that our feeding shovel consists of a box or scuttle, with a hollow handle at one end, and a door or flap at the opposite end, this door making an angle of about forty-five degrees with the bottom and one hundred and thirty-five degrees with the top of the box, all the other angles being right ones; the box containing a piston made to slide by means of a piston rod moving through the handle. The above measurements are merely given to assist the mind in comprehending the description, for it is obvious that the

dimensions of the instrument must depend upon the size of the grate or stove in which it is intended to be used. For large furnace fires, such as are used in steam engines, in distilleries, breweries, or other works, where large grates or stoves are used, the feeding shovel may very conveniently be made to hold a peck of coals; but for a small parlour fire, one holding a pound or two of coals will be sufficient. To bring the feeding shovel into action, draw back the piston close to the handle end of the box, open the door and fill the box with coals, shut the door and pass the box with its contents into the stove upon the horizontal grating above described; the door of the box acting as a wedge will then lift up the greater part of the fuel previously placed and burning in the stove; then by pushing the piston rod the piston will press against the coals in the box, and cause the coals to force open the door and lift up the remainder of the burning fuel; then by continuing the pressure against the piston rod and withdrawing the box, the whole of its contents will be deposited upon the grating and underneath the burning fuel. A fire thus supplied with fuel scarcely ever requires any other stirring than what it receives from the action of the shovel at the time fresh coals are inserted. The form of our feeding shovel may be varied at pleasure; as, for instance, the piston may slide outside of the handle, or there may be an opening at the end of the box next to the handle for the reception of a detached piston; or the door or the top piece may be omitted, in which case the coals might be pushed in under the fire by means of a detached piston; but, though we mention these as possible variations, we do not recommend them, because we give the preference to the form above described of the piston rod sliding through a hollow handle, and moving the piston in a box having a door, which when shut down shall enter as a wedge under the fire. And we do distinguish this our Invention from all others which may seem to be similar by declaring our said Invention to be an instrument, machine, or apparatus, furnished with a piston, made or used for the purpose of conveying, inserting, or depositing of fresh coals or unburnt fuel into or under the bottom of a fire previously burning in a grate or stove formed for the occasional reception of the said instrument, when filled with fuel, as herein-before particularly described and set forth.

In witness whereof, I, the said John Isaac Hawkins, have hereunto set my hand and seal, this Twentieth day of May, One thousand eight hundred and sixteen.

JOHN I. (L.S.) HAWKINS.

Dowson and Hawkins' Improvements in Grates and Stoves.

AND BE IT REMEMBERED, that on the same Twentieth day of May, in the year above mentioned, the aforesaid John Isaac Hawkins came before our Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute in that case made and provided.

Inrolled the Twenty-second day of May, in the year above written.

WM. ALEXANDER.

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